Section 5-4: Compound Inequalities

By the end of this lesson, you should be able to answer:
- How do you solve compound inequalities?

Warm Up: Think about the meaning of the word *compound*. With the definition in mind, what do you think a *compound inequality* is?

Define the following:
1. Compound Inequality:

2. Intersection:

3. Union:

Example 1: Solve and graph the solution set.

a. $7 < x + 2 \leq 11$

b. $4k - 7 \leq 25$ or $12 - 9k \geq 30$

c. $-y + 5 \geq 9$ or $3y + 4 < -5$

d. $d - 3 < 6d + 12 < 2d + 32$

Example 2: A ski resort has several types of hotel rooms and cabins. The hotel rooms cost at most $89 per night and the cabins cost at least $109 per night. Write and graph a compound inequality that describes the amount a guest would pay per night at the resort.

Example 3: Write a compound inequality and solve.
a. Eight less than a number is no more than fourteen and no less than five.

b. The product of negative five and a number is greater than thirty five or less than ten.

Summarizer: Write a compound inequality for which the graph is the empty set and one for which the graph is the set of all real numbers.

Problem Set 1: p. 306 #1-5 all, #7-15 odd

Problem Set 2: p. 306 #16, 17-27 odd, 28, 29, 31, 33-36 all

"It is always easier to believe than to deny. Our minds are naturally affirmative." - John Burroughs